

An overview on convergence acceleration of cyclic adsorption processes

ABSTRACT

Cyclic adsorption processes are inherently dynamic where the process variables are always varying with time. The cyclic processes have no steady state. Thousands of repeated cycles may be needed before cyclic steady state (CSS) is reached. In this paper, the basic concept and characteristics of cyclic adsorption processes are first introduced, using air separation by rapid pressure swing adsorption as an example. Next, different approaches to calculate and accelerate the convergence of CSS are briefly reviewed. The computational time can be reduced by having an efficient discretisation technique and accelerators to achieve the final CSS. Hybrid methods are potentially attractive.

Keyword: Adsorption; Convergence acceleration; Cyclic process